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## MANUAL TRAINING.

TWENTY years ago an article on manual training would perforce have been an argument in favor of manual training and a plea for its introduction into the general scheme of education. But today, when manual training is not only recognized as legitimate, but is even emphasized as one of the fundamental factors in all education, the point of interest among educators is the aims and ideals of various manual-training teachers, and the different methods whereby the best results are obtained.

A point at issue is the age at which wood-working should be given to children. In the School of Education the children have wood-working through the eight grades, a longer time than in most schools, the wood-working being seldom introduced before the fifth grade. With this time as a basis, it may be possible to state with some definiteness what should be expected of a child when he has completed the work in wood through the eight grades. He should know how to use the ordinary wood-working tools, how to keep them in good working order, and the average cost of each tool. He should also know something of the history of tools. The study of the hammer is a good example of what may be done in this line. It can be traced back from the tool in the boy's hand through various stages to the rock in the hand of the savage. Through such study the child unconsciously learns much of the history of the race.

One of the most important gains on the part of the child is in the power of initiation. To secure this, the child must be given larger freedom in the selection of the articles to be made by him and in the details of their construction. But that this freedom may not lead him into serious errors, his initiation must be guided by the teacher. Such guidance will need all her tact and power of suggestion and encouragement. She must see to it that he chooses an object simple enough in design and execution to be wholly within his own power, and also embody-

ing enough difficulties to test and enlarge his mental and physical powers.

The mathematical possibilities in planning and executing work are almost boundless. Before a child comes into the manual-training room he must have a clear and well-defined idea of what he is to make there. A sketch of the article to be made is first asked for, with suggested proportions. A more accurate drawing is then made, full size if possible, to scale if not. In the earlier grades this drawing, with accurate proportions, is the one used as a working drawing. Among the older children a more formal mechanical drawing is generally made. The practice of drawing is found to be a valuable element in general culture; the free hand, because it requires much creative power and concentration, develops the æsthetic faculty, also helps the child to recognize the necessity for method in representation and suggestion; the mechanical, because it demands absolute accuracy in the making, and because it stimulates the imagination which must be used in the interpretation of the drawing. Somewhat of the history and practice of architecture may be brought quite naturally into the work in drawing, through the child's interests in the designs; also a knowledge of botany in the plant analysis necessary for decorative purposes.

Since the material used in the manual-training room is principally wood, some knowledge of the process of lumbering and transportation is of much interest. The child should have a fair knowledge of the more obvious characteristics of the woods commonly used. He should know their texture, color, and odor, and degree of strength. He should also know something of the tree when growing. He should know the bark and leaves, and should have a geographical knowledge of their choice of environment. The nature study involved in this is not so much intended to give the child a systematic knowledge of the subject as to arouse in him a keen and affectionate interest in nature. The work may be much enriched by the incidental but frequent use of poems, stories, and myths about trees.

The physical development is not lost sight of, since the work

is of necessity such that healthful exercise is given to the body as well as skill to the hand. In any of the postures taken, as in sawing or planing, witness the entire body brought into action—chest expanded, every muscle alert, every sense keen, all of the child there.

The moral and the æsthetic effect of the work in manual training is not so obvious, but is none the less certain, and is even more important. Perfecting the work of his hand, making it a truly finished and artistic product, develops in the child discrimination, taste, delicate touch, co-ordination of movement; in a word, knowledge and love of the beautiful. The moral qualities of courage, patience, and diligence, of sincerity and honesty, of consideration for the rights of others, are inevitably called forth by any wisely conducted manual-training course.

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